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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/719,580	03/09/2001	Yoshiki Nakagawa	1581/00234	2233
30678	7590	09/27/2004	EXAMINER	
CONNOLLY BOVE LODGE & HUTZ LLP SUITE 800 1990 M STREET NW WASHINGTON, DC 20036-3425			ZALUKAEVA, TATYANA	
			ART UNIT	PAPER NUMBER
			1713	
DATE MAILED: 09/27/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/719,580	<b>Applicant(s)</b> NAKAGAWA ET AL.	
	<b>Examiner</b> Tatyana Zalukaeva	<b>Art Unit</b> 1713	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 July 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3,5-8,10-17 and 20-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,5-8,10-17 and 20-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. Claims 1, 3, 5-8, 10-17, 20-38 are pending. Claims 37 and 38 are new.
2. Claims 1 and 20 have been amended to introduce the steps of making a macromonomer by living radical polymerization.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1,3, 5, 10-17, 20-37 are rejected under 35 U.S.C. 103(a) as being obvious over EP 0357036.

EP'036 discloses a method for preparing comb/branched polymer consisting of a methacrylic macromonomer, as a branch ingredient, and acrylic ester as a backbone ingredient ( abstract), wherein the macromonomer synthesis is presented in the paragraph bridging pages 7 and 8, this macromonomer having molecular weight distribution of 1.2. (page 8, lines 9,10). The ratio of a macromonomer to acrylic ester monomer is 60-90/8-40. This meets the limitations of the instant claims 1, 3, 10, 11, 17, 27, 30, 33, The macromonomer is prepared by living polymerization. With regard to claim 13, see page 6, lines 30-32. The macromonomer has number average molecular weight between 3000-50000, which meets the limitations of the instant claim 16.

Styrene monomer for the main chain is named on page 3, line 54, and reads on the limitations of claim 12 A thermoplastic elastomer (as per claim 34) comprising the polymer of the instant claims is described on page 7, lines 34-40. In claims 35 and 36 the preamble merely recites a statement of intended use or purpose, and does not limit the scope of the claim, since the statements in preamble merely define the context in

which the invention operates, as per *DeGeorge v. Bernier*, 226 USPQ 758,761, n.3 (Fed.Cir. 1985).

The disclosure of EP'036 differs from the instant claims by disclosing living anionic polymerization for obtaining macromonomer vs. living radical polymerization for obtaining macromonomer. However, living process, either radical (instant claims) or anionic (EP'036) is pertinent only as a method for obtaining an intermediate product in the otherwise similar polymerization process. Furthermore, the intermediate product for polymerization . i.e. macromonomer of EP'036 is identical to the macromonomer of the instant claims, therefore it would have been within the skill of those skilled in the art to obtain substantially the same intermediate product using other known processes with the reasonable expectation of success.

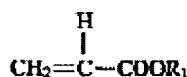
5. Claims 1, 3, 5-8, 10-17, 20-38 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Siol et al et al (U.S. 5,483,003).

Siol discloses method of making thermoplastically processible elastomers based on acrylates, which contain 40-100 wt. % of one or more comb polymers having a molecular weight greater than 50,000 Dalton, comprised of:

(A) 5-50 wt. % of macromonomers comprised of methyl methacrylate or copolymers of methyl methacrylate with comonomers chosen from other (meth)acrylic acid esters and styrenes; containing a terminal unit with a radically polymerizable group and having a glass transition temperature (T<sub>g</sub>) of at least 60C., a molecular weight in the range 500-

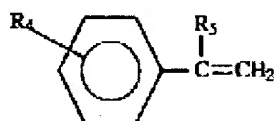
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100,000 Dalton (B) 5-90 wt. %, based on the total weight of the comb polymer, of monomers or monomer mixtures of formula I



where R1 is a C1 -C12 -alkyl group; and

(C) 5-50 wt. % based on the total weight of the comb polymer, of a phenyl group-containing radically polymerizable monomer of formula



(abstract, col. 1, lines 60-67, col.2 lines 1-55 ).

Macromonomers are prepared by living anionic or cationic polymerization, or by radical polymerization wherein a polymerizable end group is introduced by initiation or by chain cleavage and/or subsequent chemical reaction. Such explanation also pertinent to living radical polymerization. See also col.3, lines 5-11, col.4, lines 1-55 and Examples 1,2. With regard to the limitations of the process employed to obtain a starting product, the rationale applied above is incorporated herein.

6. Claims 1, 3, 5-8, 10-17, 20-38 are rejected under 35 U.S.C. 102(a) as being obvious over Matyaszewski U.S. 5,807,937

Disclosed are preferred production method for branched polymers obtained by living radical polymerization include those monomers, such as of styrene, **acrylonitrile**, **C1 -C8 esters of (meth)acrylic acid**, vinyl chloride, vinyl acetate and

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tetrafluoroethylene. Polymers preferably have a polydispersity of 1.50 or less, ***more preferably 1.3 or less, even more preferably 1.2 or less and most preferably 1.15 or less.*** Polymers and copolymers of Matyaszewski most preferably have polydispersity less or equal to 1.10 (col.38, lines 60-65). It is taught by Matyaszewski that one can select an initiator that provides the same structure as a repeating polymer unit (lines 65-67 in col.38). Matyaszewski discloses a method of atom transfer radical polymerization (ATRP), as a kind of a living polymerization process in particular application to the process of making branched and superbranched polymers. (see abstract, Fig.1.) Matyaszewski discloses a variety of suitable polymers, including acrylates, methacrylates, styrene and other vinyl polymers, terminated by a variety of functional groups, including acryloyl groups, as can be derived from the meaning of X explained through the whole body of a patent). The range of molecular weights and molecular weight distributions of Matyaszewski's end-functional and telechelic polymers are within the instantly claimed range (see, for example col. 26, lines 44-56). It is further taught by Matyaszewski that the end functionality of polymers can be easily converted to other functional groups, and initially containing CO<sub>2</sub>R group is identified as an initial functional group. With regard to claims 8-10, metal complex catalyst utilized by Matyaszewski is preferably a copper complex. The end functionality of the copolymers of Matyaszewski can be easily converted to other functional groups, including acryloyl groups by any conventional and known methods (col. 39, lines 15-25). Polymers can be prepared using water as a medium, utilizing an emulsion polymerization (col. 39, lines 43, 44). Matyaszewski exemplifies preparation of a branched polymer from

macromonomer using styrene with vinyl acetate functional groups by living radical polymerization, the polydispersity of such polymer is 1.25 (col.52, lines 24-59), but does not specifically exemplify the macromonomer having end group as instantly claimed for making branched polymers.

However, based on the generic teaching of end groups of macromers by Matyaszewski, one skilled in the art would have found the claimed macromers operable within the disclosure of Matyaszewski with the reasonable expectation of success. Consult also In re Durden, JR (226 USPQ 359 wherein the examiner rejected a claim directed to a process in which patentable starting materials were reacted to form patentable end products. The prior art showed the same chemical reaction mechanism applied to other chemicals. The court held that the process claim was obvious over the prior art.

### ***Response to Arguments***

7. Applicant's arguments with respect to claims 1,3, 5-8, 10-17, 20-38 have been considered but are moot in view of the new ground(s) of rejection.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tatyana Zalukaeva whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tatyana Zalukaeva  
Primary Examiner  
Art Unit 1713

September 22, 2004

